CLAIMS

We claim:

1. A component comprising:

a silicon-based component, said silicon-based component being subject to a corrosive environment;

said silicon-based component having a rare earth silicate coating thereon; and

said coating having a pre-established thickness, said pre-established thickness being in the range of about 1.0 microns and 5.0 microns.

2. A component as in claim 1, wherein said silicon-based component is silicon nitride.

3. A component as in claim 1, wherein said silicon-based component is silicon carbide.

4. A component as in claim 1, wherein said silicon-based component is molybdenum disilicide.

5. A component as in claim 1, wherein said rare earth silicate coating is ytterbium silicate.

6. A component as in claim 1, wherein said rare earth silicate coating is lanthanum silicate.

7. A component as in claim 1, wherein said rare earth silicate coating is yttrium silicate.

8. A component as in claim 1, wherein said pre-established thickness being in the range of about 4.0 and 5.0 microns.

9. A component as in claim 1, wherein said silicon-based component is an engine component.

10. A component as in claim 1, wherein said silicon-based component is a glow plug.

11. A component as in claim 1, wherein said silicon-based engine component is a turbocharger.

12. A component as in claim 1, wherein said silicon-based engine component is a turbine blade.

13. A process for coating a silicon-based component, comprising:

forming a silicon-based component, wherein said silicon-based component is a rare earth-doped ceramic;

increasing the temperature of said silicon-based component to about above 1100 degrees C for a time in the range of about six hours to about twelve hours to oxidize said silicon-based engine component;

forming a silica layer;

reacting said rare earth-doped silicon-based ceramic of said silicon-based component by creating a reaction with the silica layer of said silicon-based component;

forming a rare earth silicate coating on said silicon-based component.

14. A silicon-based glow plug having a heating element and having a tip, said tip having an outer surface, comprising:

said silicon-based glow plug having a rare earth silicate coating on said outer surface; and

said coating having a pre-established thickness, said pre-established thickness being in the range of about 1.0 microns and 5.0 microns.

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